

CLAIMS

What is claimed is,

- 1 ^{SUB}_{A1} 1. A method of determining a position of an
2 unknown point in space using at least two cameras aimed
3 such as to have an overlapping field of view, comprising
4 the steps of,
5 generating in each of said cameras an image
6 corresponding to at least four points lying in a reference
7 plane, the reference plane being common to the respective
8 images of the cameras;
9 calculating a planar projective transform that
10 maps said images of said at least four points to a
11 reference frame, said reference frame being a projection of
12 said reference plane;
13 generating, in each of said cameras, images of at
14 least two calibration markers whose positions relative to
15 said reference plane are known and an image of an unknown
16 point;
17 for each of said images of said at least two
18 calibration markers and said image of an unknown point,
19 applying said transform to define respective points in said
20 image plane; and
21 computing at least a distance of said unknown
22 point from said reference plane responsively to at least a

23 depth of said unknown point and coordinates of said unknown
24 point and said at least two points transformed into said
25 reference frame.

1 2. A method as in claim 1, wherein said step of
2 computing includes computing a distance of said unknown
3 point from said reference plane responsively to positions
4 of said calibration points.

1 3. A method as in claim 2, wherein said
2 positions indicate a distance of said calibration points
3 from said reference plane

1 4. A method as in claim 1, wherein said step of
2 generating includes positioning said calibration markers in
3 said overlapping field of view.

1 5. A method as in claim 4, wherein said step of
2 positioning includes extending a boom with said markers.

1 6. A method as in claim 1, wherein said
2 position includes only a distance from said reference
3 plane.

1 7. A strap-down three-dimensional
2 reconstruction system, comprising:

3 a jig supporting at least two cameras;

4 said jig having a structure to support at least
5 two calibration markers in a position such as to be visible
6 by said at least two cameras; and

